Remarks

After the Office Action mailed September 16, 2008 (hereinafter: "the Office Action"), claims 1-10, 13, 15-17, and 19-28 are currently pending and stand rejected. Claims 1-3, 7, 8, 13, 19, 22, and 27 have been amended to address informalities pointed out by the Examiner. Reconsideration of the above-identified application in view of the present amendment and remarks is respectfully requested.

I.   Objection to Abstract

The Examiner has objected to the abstract for the presence of reference numerals in the drawings, stating that MPEP §608.01(b), section C, prohibits the sheet containing the abstract from including other parts of the application or other material. Applicants respectfully submit that this reading of MPEP §608.01(b) is in error, and note that there are numerous issued patents containing reference numbers within the Abstract. In the interest of advancing the prosecution of the subject application, however, the Abstract has been amended to remove the reference numerals. It is respectfully requested that this amendment be entered, as it merely addresses a formal objection to the application, placing it in better form for further consideration or appeal.

II.   Objection to Claims 1-3, 7, 8, 13, 19, 22, and 27

Claims 1-3, 7, 8, 13, 19, 22, and 27 have been objected to for various informalities. Each of these claims has been amended to match the language assumed by the Examiner for examination purposes, *See* Office Action, pg. 3, and it is thus respectfully submitted that the amendments do not change the scope of the claims as to raise new issues or require a new search. It is respectfully requested

that this amendment be entered, as it merely addresses formal objections to the

claims, placing it in better form for further consideration or appeal.

III.   **Rejection of Claims 1-9, 13, 15-17, 19-23, and 25-28 under 35 U.S.C. §103**

Claims 1-9, 13, 15-17, 19-23, and 25-28 have been rejected as unpatentable

under 35 U.S.C. §103 over an article "Feature Extraction for a Multiple Pattern

Classification Neural Network System" by Murphey et al. (hereinafter: "Murphey") in

view of U.S. Patent No 7,003,134 to Covell et al (hereinafter: "Covell") and in further

view of U.S. Patent No. 5,983,147 to Krumm (hereinafter: "Krumm"). It is respectfully

submitted that the Office Action does not lay out a *prima facie* case for the

obviousness of claims 1-9, 13, 15-17, 19-23, and 25-28.

It is respectfully submitted that the Office Action does not articulate a rationale

sufficient to lead one of skill in the art to modify Murphey in view of Covell and

Krumm to provide the system recited in claim 1.   In arguing that it would be obvious

to extend Murphey to The Examiner cites a portion of Covell noting that depth

information is "less sensitive to illumination and shading effects than intensity data as

an object translates and rotates through space. Hence, the depth data is frequently

more reliable than the brightness information." Col. 3, line 25. Even assuming,

arguendo, that this motivation held true generally, as opposed to the specific

machine vision application of Covell, it is respectfully submitted that it would, at best,

lead one of skill in the art to replace or supplement the features extracted from each

two-dimensional portion of the grid of Murphey with the purportedly more reliable

depth data for the portion of the vehicle interior depicted in the grid portion. The

cited motivation would not lead one of skill in the art to produce a three-dimensional

grid pattern for the purposes of feature extraction, as recited in claim 1, and nothing

in Covell, even read in light of Murphey, would appear to provide a suggestion of the use of a three-dimensional grid. It is thus respectfully submitted that no sufficient rationale has been provided for the modification of Murphey in view of Covell as to read on the system recited in claim 1, and that a *prima facie* case of obviousness has not been established.

It is further submitted that no sufficient rationale has been provided for the modification of Murphey in view of Krumm, as one of skill in the art would not seek to utilize disparity image processing to avoid "preprocessing normalization and histogram steps" utilized for intensity image. Office Action, pg. 6. Producing a disparity image from two images is relatively computationally intensive and requires additional hardware including at least a second image sensor located as to provide a different perspective on an imaged subject. It is believed that normalization, filtering, and histogram generation is relatively straightforward and computationally efficient in two-dimensional image processing. It is thus respectfully submitted that one of skill in the art would not expend the additional resources necessary to produce disparity images, including the addition of extra hardware and more complex image processing algorithms, merely to avoid normalizing, preprocessing, and constructing an intensity histogram for a training image. It is thus respectfully submitted that no sufficient rationale has been provided for the modification of Murphey in view of Krumm as to read on the system recited in claim 1, and that a *prima facie* case of obviousness has not been established.

Claim 3, which depends from claim 1, recites that the grid pattern divides the class composite image with a plurality of intersecting planes and curved surfaces into a plurality of sub-images, with the feature extractor extracting data relating to

each of the plurality of sub-images. The Examiner responds that a curve can be defined generally as "the intersection of two surfaces in three dimensions." It is respectfully submitted, however, that claim 3 does not recite a "curve", but a "curved surface". According to the McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition, a curved surface is "a surface having no part that is a plane surface." (See http://www.answers.com/topic/curved-surface). It is respectfully submitted that even were one of skill in the art lead to expand the purported teachings of Murphey to three-dimensions, Murphey uses only straight lines in constructing a grid, and there is no teaching or suggestion in Murphey to use curvilinear boundaries or curved surfaces in constructing a grid pattern. Covell and Krumm, even read in view of Murphey and one another, fail to remedy this deficiency. It is thus respectfully submitted that claim 3 defines over the cited art for this reason as well as for its dependence on claim 1.

Claim 6, which depends from claim 4, recites that an attribute of interest used in to selecting one of a plurality of sub-images is a maximum grayscale variance out of a plurality of grayscale variances associated with respective sub-images. The Office Action cites a portion of Murphey stating that the feature image can be used differently for different types of training images, and notes that "the variance of a sample is directly applicable to the average of the sample." Office Action, pg. 8. From these two statements, the Examiner reasons that it would be obvious to utilize the grayscale variance as an attribute of interest.

What is meant by the statement that the variance is "directly applicable" to the average? It is presumed that this statement refers to the relationship between the mean, a form of average, and the variance as the second central moment around the

mean. It is respectfully submitted, however, that a number of descriptive statistics are related in some form to the mean, but would not necessarily be a good choice to replace the mean in a given application. For example, the skew and kurtosis of a data set are determined in a similar manner from higher moments around the mean, and it is respectfully submitted that it is unlike that either would provide a meaningful attribute of interest for the claimed system. Covell and Krumm do not appear to provide any relevant teaching or suggestion for identifying feature-rich regions of an image, and while Murphey lists a number of different image types and provides parameters that might be useful in locating strong features within those image types, there is no mention of the use of grayscale variance in defining a grid pattern. If Examiner maintains that the use of the grayscale variance in place of the average would be obvious to one of skill in the art, it is respectfully that the Examiner similarly identify an image type that would benefit from the use of the grayscale variance, as opposed to the average or mean grayscale value, in identifying regions containing important features, such that it would be obvious for one of skill to modify Murphey in the manner suggested. Otherwise, it is respectfully submitted that one of skill in the art would not be lead to modify Murphey to produce the system recited in claim 6, and the withdrawal of the rejection of this claim is respectfully requested.

Claims 13 and 19 have been rejected over Murphey, Krumm, and Covell with similar reasoning, and it is thus respectfully submitted that the Office Action also fails to establish a *prima facie* case of obviousness for these claims. Each of claims 2-9, 15-17, 20-23, and 25-28 depend, directly or indirectly, from one of claims 1, 13, and 19, and define over the cited art for at least the same reasons. It is

thus respectfully requested that the rejection of claims 1-5, 7-10, 19-23, and 25-28 under 35 U.S.C. §103 be withdrawn.

IV.   Rejection of Claim 10 under 35 U.S.C. §103(a)

Claim 10 has been rejected as unpatentable under 35 U.S.C. §103(a) over Murphey, Covell, and Krumm, in further view of U.S. Patent Publication No. 2003/0169906 by Gokturk et al. (hereinafter: "Gokturk"). Claim 10 depends indirectly from claim 1 and defines over the cited art for at least the same reasons. Gokturk fails to overcome the deficiencies of the proposed combination of Murphey, Covell, and Krumm as described above. It is thus respectfully submitted that claim 10 defines over the cited art.

V.   Rejection of Claim 24 under 35 U.S.C. §103(a)

Claim 24 has been rejected as unpatentable over Murphey, Covell, and Krumm, in further view of U.S. Patent Publication No. 2002/0051571 by Jackway et al (hereinafter: "Jackway"). Claim 24 depends from claim 19 and defines over the cited art for at least the same reasons. Jackway fails to overcome the deficiencies of the proposed combination of Murphey, Covell, and Krumm as described above. It is thus respectfully submitted that claim 24 defines over the cited art.

VI.   Conclusion

In light of the amendment and remarks above, it is respectfully submitted that claims 1-10, 13, 15-17, and 19-28 define over the cited art. The withdrawal of the rejections of these claims and the passage of the application to allowance is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this matter to our Deposit Account No. 20-0090

Respectfully submitted,

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